View metadata, citation and similar papers at core.ac.uk
brought to you by CORE
provided by UUM Repository

SHORTAGE IN SUPPLY OF PLASTIC RAW MATERIALS FOR THE PLASTIC INDUSTRY

[1]Amier Zailanee bin Bahrom and [2]Risyawati Mohd Ismail

College of Business, School of Technology Management and Logistic,
University Utara Malaysia, 06010, Sintok, Kedah, Malaysia
[1]amergreen_1p@yahoo.com; [2]risyawati@uum.edu.my

ABSTRACT

There is a shortage of raw materials used for making plastics and this shortage has instigated serious supply issue in the plastic base industry. Unfortunately the un-renewable nature of petroleum is casting even a serious crisis in the future. Other source of raw materials must be developed as soon as possible to overcome this crisis. Worldwide plastic demand is growing thus casting doubt on the future of the industry. This has led researchers on starting various studies to meet the growing demand by the plastic industry and to overcome growing scarcity of petroleum. With the help of modern technology new material such as bioserin was discovered as the alternative source of raw material for the plastic industry.

Keywords : bioplastics , bioserin , plastic.

1.0 INTRODUCTION

Plastics play an important role in the dimensions of the environment, social and economic development mampan (PlasticEurope, 2009). Plastic is lightweight, durable, clean and with the permissiveness and the plastic used to make packaging, automotive, building, electronics and electrical products. In malaysia the higher demand for plastics, in 2009, the manufacturing industry accounted for as much as 25.5 peratus to Exodus In Rough Country (KDNK). Exports recorded a growth of goodies making peratus to RM283.4 much as 23.2 bln in the first seven years the entire period, namely from January to Julai in 2010 (yusri abd latif, 2012).

If we use other materials to replace plastics, natural impression about boarding and will be more likely to increase. For example, Americans use 100 billion of plastic beg a year, which were made than about 12 million barrels of oil, by contrast, uses 10 bln beg significantly reduce paper every year 14 million principal (Science World, 2008). The use of crude oil to produce plastics using terhad source (power) but a significant reduction in paper usage ability planet to absorb carbon dioxide (CO2).

Realized interests that plastic and plastic nature of the source terhad than done, there are a lot of efforts in the investigation and development of plastic to make the plastic where it may be used initially or originally dikitar. According to the Natural Position Around, Food and It Ehwal Bandar Affairs (Defra) 's Time Strategy 2007, the royal UK has set out to achieve 45% target originally kitar 2015. In 2008-09, 27.3 million tons of urban waste collected by the UK government but the host sent flowers disposal of 50.3%, 36.9% had the original recycled or composted, 12.2% were burned for energy recovery (Defra, 2010). It seems there is a lack of management attention and inquiry into the final product rather than plastic made.

There are many businesses in many different areas of investigation Try to get the technology and the means to develop new plastic raw materials. Modern technology is used by many studies have produced bioplastic. Bioplastic is ideal in hot and humid environments. With this discovery, we no longer need to think about the end of the plastic product maintenance done as bioplastics from biodegradable organic material to the soil and weather.

2.0 LITERATURE REVIEW

literature review will discuss the new alternative feedstock to replace petroleum raw materials had declined and the increasingly high cost and meet the demand of plastic related industries are growing in the world.

2.1 Definition

The demand for higher petroleum cause petroleum prices rise, thereby directly affect the plastic production to the industry. Therefore an alternative to replace the raw materials should be developed to meet the industry demand. Parties conducting research with the help of modern technology has found raw materials for producing plastics to replace petroleum bioresin made from corn starch, potato and sweet elephant (Amir Abul Hasan Ash'ari, 2012). These materials are used to make plastics called bioplastics are more environmentally friendly. Said bioplastics manufacturing cheaper and can fulfill the increasing 'demand in the future.

2.2 Why Raw Material Bioserin

2.2.1 Reduce The Environmental Pollution

bioplastics are made from degradable materials, so materials will not pollute the environment like plastic made from petroleum. Bioplastics are more sustainable because it can decompose in the environment faster than regular plastic, which can take more than 100 years (online messenger, 2012)

2.2.2 Bioserin Reduce Petroleum Consumption

Increasingly significant petroleum shortage will affect many sectors, particularly in the present transpot.plastik use petroleum to produce plastics and dapt not meet the high demand in the market. Thus with no bioplastics will reduce the use of petroleum and can fulfill the demand in the market.

2.3 The Process

Bioplastics are a type of plastic made from biomass sources of renewable energy, such as fat and vegetable oil, corn starch, pea starch or mikrobiota designed Bioplastics can be decomposed either in anaerobic or aerobic environments, depending on how it is produced. There are various types of bioplastics are designed. It can be made from starch, cellulose or biopolymers. Bioplastics are used in the production of packaging materials, food packaging, insulation and tableware, such as plates, bowls, spoons, forks, pots, bowls and straws (Nuraina KHALIL, 2012). Bioplastics manufacturing process using equipment includes glass tools, analytical balances, micro pipette, stirer hotplates, air upright, thermometer, and plate glass desiccator as print bioplastics.

2.4 Key Parameters

Most of the wheat gluten-based bioplastics, which are plasticized with glycerol, is subject to biodegradation. Materials protected amount is to control various biochemical parameters Fi, stating the percentage of protein aggregates. This quantity can be related to the density of covalent cross-connect in the wheat gluten network, which is caused by the treatment technology. Biodegradability tests were performed in a liquid medium (modified Sturm test) and in farmland. All ingredients are gluten out completely after 36 days in aerobic fermentation and within 50 days of farm land. No significant difference was observed between samples. The mineral-time half life of 3.8 days in the modified Sturm test gluten material located between the polymer degrading quickly. Microbial inhibition test experiments revealed no toxic effects of gluten modified or metabolites. Therefore, most of the wheat gluten protein material is non-toxic and completely environmentally friendly, whatever the technology used.

2.5 Different

Bioplastics are a family of polymers made from renewable or environmentally friendly materials covering a wide range of features and applications. There are three groups in the bioplastics family, each with their own individual characteristics:

1. Fully or partially biobased polymers and environmentally friendly, such as biobased PE, PET or PP (drop-in), and as PA, PTT or TPC-ET (technical performance polymers).
2. Biobased polymers and environmentally friendly, including PLA and PHA.
3. Polymer-based and environmentally friendly fossil fuels entirely, as PBAT or PBS.

3.0 METHODOLOGY

To achieve the above research objectives, this study first conducted a comprehensive review of the findings of modern technology developed for the research and to review the current state of supply chain problems in plastic and plastic raw materials. Further, a number of case studies focusing on plastic bioserin to make bioplastics have been conducted. Methodology described below.

This study was conducted based on the lack of raw materials is a serious concern of many. The basic raw material used now experienced a decline due to high consumption of whole and by the individual or the group. Several methods have been carried out to study the material more easily available parts for plastic products and save environmental surroundings. This study emphasizes the raw materials such as food, fats and vegetable oils.

In this study, carried out a study on raw materials that are easily available and will replace petroleum feedstock discretion to make plastics. This analysis is done by the journal, magazine and resources from the internet.

4.0 FINDINGS

4.1 Material Bioplastics Flow

The study can be concluded that not only petroleum can produce quality plastic. There is still a raw material that can produce plastic and ptroleum equivalent quality. There are many types of bioplastics, including starch-based bioplastics used. Pure starch is able to absorb moisture. Therefore, it is widely used in the manufacture of capsules of drugs, while cellulose-based bioplastics are widely used in packaging. In addition, based bioplastics Polylactic acid (PLA) made from cane sugar or glucose is used to make wrappers, cups and bottles. Poly-3-hydroxybutyrate (PHB) has a melting point higher than 130 degrees Celsius and biodegradable without residue. Bioplastics from Polyhydroxyalkanoates (PHA) is less elastic than other bioplastics, which are widely used in the medical industry (Nuraina KHALIL, 2012).

According to a report in a review article bioserin material is part, there are still many other raw materials to replace petroleum to produce plastics that have not been seriously studied by a particular party.

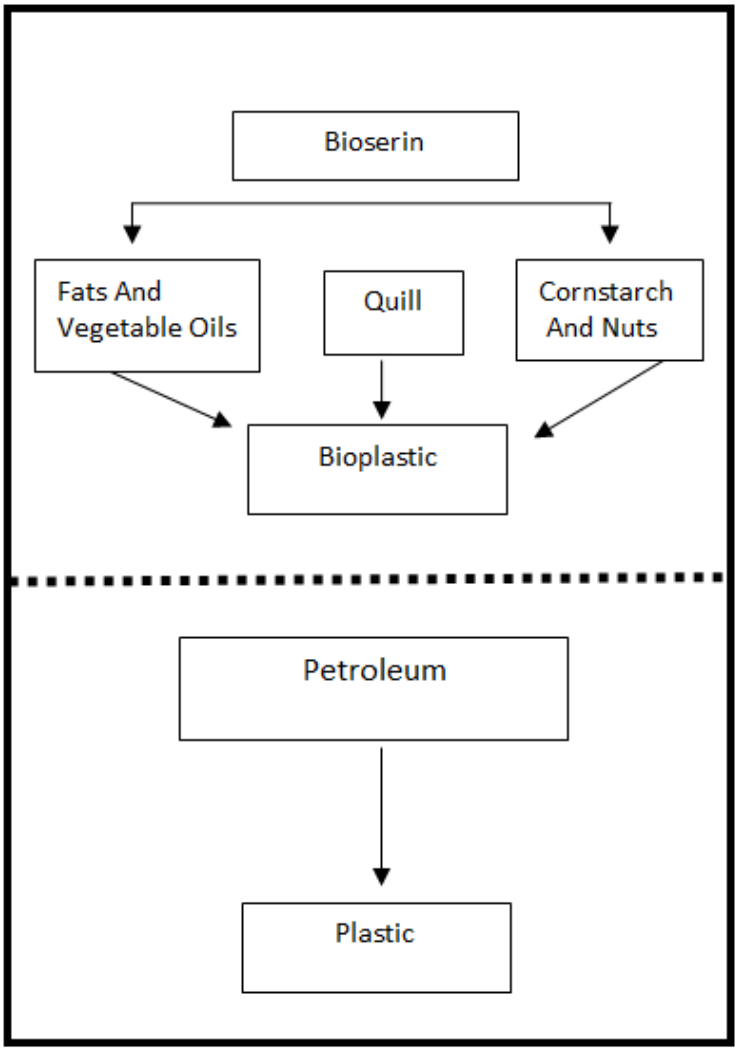
5.0 DISCUSSION

Based on the analysis of referred journals and articles found there are a number of things related to the recent discovery of petroleum-based raw materials to replace this.

5.1 Method To Make Bioplastics

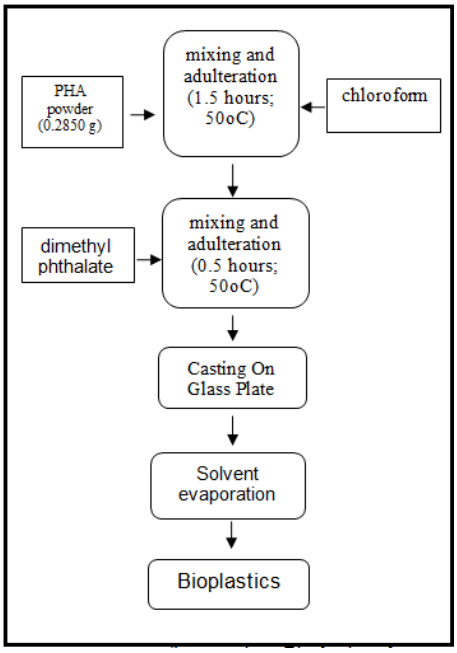
Plastic manufacturing a polymerization process. Polymerization is the process of merging several monomers into polymers which have larger molecules. Ideal plastic polymer chains have a very long and straight which makes strong and flexible. Processing method using starch base material taken from corn flour as a component of policy and amilopektin amilose. Amilose is straight and long polymers, amilopektin are short and branched polymers, polymer maknanye will produce short and brittle plastic.

There are two ways that can be done to produce the desired plastic, the first to use the technique of acid hydrolysis (acid hydrolysis) by adding vinegar into the plastic to be able to break the plastic amilopektin become stiff and brittle. The second way to add plasticyzer (this material can be obtained in the name of glycerine), glycerol serves as decomposers molecules to be able to make a strong and flexible plastic, this depends on the nature of desire by adding glycerin, if you'd like a flexible plastic then add the glycerin much, but if you want a hard plastic then add a little glycerin.



Method for producing a medium without the use of modern machinery used to make other Bioplastics blatant one tablespoon of corn flour, four tablespoons of water, one teaspoon of glycerin, a teaspoon of vinegar. I create the insert all the ingredients in a small container and then heat it with a small flame. stir earlier material is heated up while the material shaped like a gel, break any air bubbles that hasinya nice. After the process is complete turn off the heat and pour the mixture into the mold and let a one for one basis. But there are other methods to produce bioplastics which is up on the serious research in this field of bioplastics.

Bioplastics manufacturing flow diagram (akmaliah, 2003)



5.2 Problem

There is a problem in generating these bioplastics because this method requires a large investment in expensive equipment modern technology. Not many of these methods of processing equipment for the new method still has not received wide coverage means of processing. Bioplastics also require high costs for processing bioserin.

5.3 Alternate Solutions

Through research through journals and articles find that there is a solution to the problem of developing a method of bioplastics.

5.3.1 Giving Effect To The Environment

The cost of developing bioplastics method requires large cost, but its impact on the environment is huge. Use of bioplastics will reduce the negative impact for a long time. Unlike ordinary plastic byang negative impact for a long time.

5.3.2 Replace The Petroleum Feedstock

Petroleum raw material shortage facing an increasingly significant impact. Therefore very suitable to replace bioserin petroleum in plastic production since bioserin can produce the same plastic as regular plastic.

5.4 Final Solutions

Process that requires significant costs BUT production and use of bioplastics is generally regarded as a more sustainable activity when compared with normal plastic production. But the study and improvement should be continued so that more sustainable production processes and cost-effective.

6.0 LIMITATIONS

6.1 Time

Time is an important point when we want to make a good research. I do not have enough time because of the time taken used belong to other tasks. Among other things to be done is the work group tasks, individual tasks and others.

6.2 Source References

To do the study also takes a lot of resources to make referrals study. Study, however, I do not have many references for the study so I do not get a broad range of studies made by the related parties. There are a number of research only manufactured by the private sector and abroad.

7.0 RECOMMEDATIONS

Party group, or a combination of the government should pay attention to the findings of researches in making this bioserin. The purpose of this study was to establish Malaysia as a global powerhouse in the field of bioplastics after being a great power in plastic production in Asia, the euro and the U.S.. Bioplastics much positive impact on the nation and the world.

8.0 CONCLUSIONS

Plastics increasingly high demand by the plastics industry, is Used to make packaging, automotive, construction, electronics and electrical products. Raw material of bioserin replace petroleum feedstocks to make plastics have a very big change to the plastic industry to be Able to address the lack of raw materials of petroleum increasingly apparent. However, this bioplastic to Develop a Requires method and significant investment in building the modern tech equipment to make bioplastics. The Crash Findings of this bioserin cans a give a good impression to the environment as plastic Produced degradable in nature as compared to regular plastic made by the petroleum that's takes up Hundreds of years to undergo dissociation process. By the relevant Parties Directly or indirectly in this plastics industry must do research on an ongoing basis to Obtain better results and cans Reduce of the cost to Develop a more efficient and build a cheap bioplastics processing equipment.

REFERENCES

_____.(2012). Bahan plastik mesra alam sekitar. Retrieved april 29, 2013, from httHttp://www.sinarharian.com.my/bisnes/bahan-plastik-mesra-alam-sekitar-1.95314.

Sabriantoropratama.(2010). Bioplastik, Solusi Masalah Plastik. Retrieved April 29,2013. From Http://Sabriantoropratama.Wordpress.Com/2010/10/04/Bioplastik-Solusi-Masalah-Plastik.

Neli Suryani.(2012). Bioplastik. Retrieved April 29, 2013, From Http://Biomedisneli.Blogspot.Com/2012_12_01_Archive.Html.

_____(2012). Bukan Salah Plastik. Retrieved April 29, 2013, From Http://Www.Utusan.Com.My/Utusan/Info.Asp?Y=2012&Dt=0611&Pub=Utusan_Malaysia&Sec=Laporan_Khas&Pg=Lk_01.Htm#Ixzz2lq8fb6h4.

_____(2011). Bisnes Dunia: Bulu Ayam Boleh Jadi Produk Plastik. Retrieved April 29,2013, From Http://Www.Bharian.Com.My/Articles/Bisnesdunia_Buluayambolehjadiprodukplastik/Article/.

_____(2008). Duti Import Bahan Mentah Wajar Diturun. Retrieved April 29,2013, From Http://Www.Utusan.Com.My/Utusan/Info.Asp?Y=2008&Dt=0702&Pub=Utusan_Malaysia&Sec=Ekonomi&Pg=Ek_02.Htm#Ixzz2muqf5fmu.

Ade Irawan.(2011). Harga Bahan Baku Plastik Melejit. Retrieved April 29,2013, From Http://Finance.Detik.Com/Read/2011/03/08/072836/1586529/1036/Harga-Bahan-Baku-Plastik-Melejit.

Wiji Nurhayat.(2012). Harga Bahan Baku Plastik Naik 15% Akibat Minyak Dunia. Retrieved April 29,2013, From Http://Finance.Detik.Com/Read/2012/10/10/184326/2059609/1036/Harga-Bahan-Baku-Plastik-Naik-15-Akibat-.

_____.(2008). Harga Minyak Rendah, Untung Tidak Naik. Retrieved April 29,2013, From Http://Www.Utusan.Com.My/Utusan/Info.Asp?Y=2008&Dt=1105&Pub=Utusan_Malaysia&Sec=Ekonomi&Pg=Ek_05.Htm#Ixzz2muijkwug.

Christine Franciska.(2013). Industri Plastik: Harga Minyak Naik, Produsen Khawatir Bahan Baku Ikut Terkerek. Retrieved April 29,2013, From Http://Archive.Bisnis.Com/Articles/Industri-Plastik-Harga-Minyak-Naik-Produsen-Khawatir-Bahan-Baku-Ikut-Terkerek.

Azman Anuar.(2012). Kanji Ubi Gajah Hasilkan Plastik. Retrieved April 29,2013, From Http://Www.Utusan.Com.My/Utusan/Sains_&_Teknologi/20121022/St_01/Kanji-Ubi-Gajah-Hasilkan-Plastik#Ixzz2lp69rmta.

Melati Mohd Arif.(2012). Kenaikan Harga Bahan Api: Masa Untuk Penggunaan Dan Perbelanjaan Berhemah. Retrieved April 29,2013, From Http://Www.Kpdnkk.Gov.My/En/380;Jsessionid=510c9f9d2be648f974278fc71e67b135.

Azman Anuar.(2012). Kilang Bioplastik Icbp Patut Dibantu. Retrieved April 29,2013, From Http://Www.Utusan.Com.My/Utusan/Rencana/20121008/Re_07/Kilang-Bioplastik-Icbp-Patut-Dibantu#Ixzz2lpn3pz5x.

Azman Anuar.(2011). Masalah Yang Dihadapi Oleh Industri Plastik Global. Retrieved April 29,2013, From Http://Ms.365gbo.Com/News_Show.Htm/?2011-10-29-101708.

_____.(2011). Masalah Mubiplas Masuki Pasaran Asing. Retrieved April 29,2013, From Http://Www.Utusan.Com.My/Utusan/Info.Asp?Y=2010&Dt=0823&Pub=Utusan_Malaysia&Sec=Korporat&Pg=Ko_03.Htm#Ixzz2lpkcjpco.

_____.(2008). Muhyiddin Minta Kadar Duti Import Bahan Mentah Diturunkan. Retrieved April 29,2013, From Http://Mstar.Com.My/Berita/Cerita.Asp?File=/2008/7/1/Terkini/Mutakhir/Muhyiddin_Minta_Kadar_Duti_Import_Bahan_Mentah_Diturunkan&Sec=Mstar.

_____.(1950). Plastic Industry In Difficulties Shortage Of Raw Material. Retrieved April 29,2013, From Http://Ebookbrowse.Com/Plastic-Industry-In-Difficulties-Shortage-Of-Raw-Material-Pdf-D42509080.

Herdiyanto Mahmud Bokings.(2008). Potensi Bakteri Ralstonia Eutropha Sebagai Penghasil Bioplastik Dari Substrat Limbah Organik. Retrieved April 29,2013, From Http://Herdiyantomahmudbokings.Blogspot.Com/P/Potensi-Bakteri-Ralstonia-Eutropha.Html.

Mohd Yusri Abdul Latip.(2012). Prestasi Industriiplastik Negara Meningkat. Retrieved April 29,2013, From Http://Dwnekonomi.Dbp.My/Wordpress/?P=203.

_____.(2012). Waste Management Bioplastics. Retrieved, April 29,2003,From Http://Www.Plastemart.Com/Upload/Literature/Waste%20management-Bioplastics-Bio-Packaging.Asp.